THE EMBODIMENT OF LANGUAGE AND THE PRACTICE OF PSYCHOTHERAPY

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ABSTRACT

Cognitive domains such as action perception, simulation, and imagery have been shown to have a sensory-motor nature; a growing body of neurophysiological and neuro-imaging data extends this embodiment also to language and to concept formation, as previously postulated by cognitive linguistics. The role played by conceptual metaphors in abstract thinking and meaning shared between speakers is described. Conceptual metaphors and their use in everyday language are discussed, emphasizing both their universality and their variation in specific pathological populations. A brief description about the way hypnosis works is given and the close link between hypnosis and metaphor is discussed. It is suggested that opportunities are made to make a fine-graded assessment of the particular use of metaphors by individual patients; suggestions are proposed also in order to reach a deep awareness about the involvement of sensory-motor parameters in all clinical contexts in which speech may be a vehicle for a change in the body, especially in Ericksonian psychotherapy.

Key words: metaphor, hypnosis, psychotherapy, Ericksonian, neuroscience, language

INTRODUCTION

In previous contributions we have reviewed the implications of mirror neurons in the practice of psychotherapy (Balugani, 2008; Balugani & Ducci, 2007). These pre-motor neurons, rather than simply monitoring the execution of an action, also fire during the observation of the same action performed by someone else. The 'embodied simulation' (Gallese, 2007) is the postulated mechanism of resonance emerging from functioning: this preconscious, automatic mechanism also allows for many fundamental abilities such as imitative learning, the comprehension of fine actions performed by another, and the inference of the purposes of such actions as well as the agent's intentions (Iacoboni et al., 2005). Thanks to the encoding of the observed experience in the observer's physiological parameters, this automatic and preconscious process would predispose the adult human to empathy (Gallese et al., 2004; Gallese, 2007). In the authors' hypothesis, through the process of internally simulating another person's goals, one comes to infer and represent the other's mental state, as well as anticipating the actions these intentional mind states are likely to cause. This involves creating mentally the internal subjective states of the other in ourselves by imitation, identification, or as has recently been discovered, through neural resonance evoked by the automatic activation of our mirror neuron system during the observation of another's behaviour (Gallese et al., 2004; Gallese, 2007).

This radical account of understanding action through a motor simulation mechanism has been recently criticized by researchers from other fields of study (Fonagy et al., 2007). Firstly, developmental research has found that STS (the superior temporal sulcus) was being activated in infants as young as 6 months by the observation of actions for which they still do not have motor schemes (Kamerawi et al., 2005; Luo & Baillargeon, 2005; Wagner & Carey, 2005). Secondly, by using neuro-imaging techniques with very accurate experimental designs, other researchers have found a wider activation pattern, rather than that localized to the mirror neuron system: the activation involves brain areas such as the above mentioned superior temporal sulcus, the temporo-parietal junction, and the anterior fronto-median cortex, which have no mirror properties and are typically involved in mentalization and belief attribution tasks (Grezes et al., 2004; Saxe & Kanwisher, 2003; Saxe & Wexler, 2005). Lastly, a functional magnetic resonance imaging (fMRI) study used the ingenious method of 'rubber hand illusion' in order to determine whether the brain attributed the same observed action to the self as it did to another agent: the authors concluded that in contrast to the radical 'shared representation' model of self–other understanding, 'the motor system . . . includes representations of other agents as qualitatively different from the self' (Schütz-Bosbach et al., 2006).

Even considering the criticisms raised against the hypothesis of a unique, sensory-motor mechanism able to manage the attribution of meaning to human experience, we are not persuaded to abandon the importance given to embodied processes. As we have described in previous works (Balugani, 2008; Balugani & Ducci, 2007), there are other features of brain functioning which highlight the existence of such a mechanism, mental imagery being one of these. The ability to autonomously activate representations of fine-detailed, same-as-real scenarios in the absence of the actual perceptive and motor inputs and outputs is quite a different kind of simulation: if compared to the embodied experience described by Gallese and colleagues (Gallese, 2001; 2006; Gallese et al., 2004), mental imagery is deliberate, conscious, and controlled. In spite of this, neurophysiological registration, as well as neuro-imaging studies, show that it can elicit the activation of a large part of the very same cortical and sub-cortical structures involved in actual perception and movements (Jeannerod, 2001). This means that aspects of understanding and reasoning skill rely on the activation of processes primarily involved in perception and action: that is, an embodied simulation process is implicated.

Similar characteristics are traceable in another cardinal cognitive domain: language. From a phylogenetic perspective, mirror areas have been postulated as the anatomic platform where language evolved from its predecessors, action, understanding, and imitation. Autonomous speech may be the result of a conventionalized set of symbolic actions progressively extended from hand to facial and vocal movements (Arbib, 2005; Corballis, 2009). In the present study, we would like to analyse concept formation, categorization, and reasoning, and their correlations, with embodied mechanisms. After that, we would like to discuss some important implications in the psychotherapeutic process in general, and in hypnotic therapy in particular. As we noted previously (Balugani, 2008; Balugani & Ducci, 2007), we consider hypnosis embodied in nature. Our aim is to ascribe to hypnosis (and its linguistic counterparts, such as the use of metaphors) an effectiveness descending from the sensory-motor computational level at which it works.

THE CONCRETE ROOT OF CATEGORIES

In their review, Gallese and Lakoff highlighted the role of cognitive linguistics in the comprehension and managing of concept formation (Gallese & Lakoff, 2005; Gallese, 2003). They begin with strong criticism of the classical theory of language, for which concepts were conceived as abstract, amodal, arbitrary, made up of symbols, and having the properties of productivity and compositionality, among other things. In Fodor's theory (see Fodor, 1975), the purported amodal (or supra-modal) nature of concepts are implemented in putative brain structures, endowed with characteristics and rules totally independent from those governing the input/output modules. Cognitive linguistics, in contrast, ascribes the inferential structure of concepts to the web-like structure of the brain, as well as its organization in functional clusters. The human brain can generate and use concepts thanks to previous interactive experiences with the phaenomenic world, and to the development of perceptual and motor processes in charge of regulating these interactions. This position rejects the 'grandmother cell' theory, which assumes that the concept 'grandmother' is represented by one neuron: if it dies, then its semantic counterpart is lost. On the contrary, concepts are embedded in a web of connections, with the functional clusters governing the sensory motor experience (Lakoff & Johnson, 1998) at the most basic level. At least in this regard, concepts are primarily embodied.

In this sense, language is inherently multimodal; that is, it uses many modalities linked together—sight, hearing, touch, motor actions, and so on. Language exploits the pre-existing multimodal character of the sensory-motor system. If this is true, then there is no single 'module' for language.[1] Let us explore the arguments about categorization and concept formation in detail.

The classic theory of categorization assumed that categories form a hierarchy—bottom to top—and that there is nothing special about the categories in the middle. This view was challenged by the research of Rosch and her co-workers, who found that in a hierarchical continuum (such as 'vehicle – car – sports car'), the term in the middle is special; Rosch called it a 'basic-level' category (Rosch, 1973; 1978). One can get a mental image of a car but not of a vehicle in general: we have motor programmes for interacting with cars, but not with vehicles in general (a bicycle requires very different motor skills to those involved in driving an articulated lorry).[2] The basic level is the highest level at which this is true. Moreover, words for basic-level categories tend to be recognizable *via* gestalt perception. These are learned earlier, are shorter (e.g. car vs. vehicle), occur more frequently, are remembered more easily, and so on. Rosch observed that the basic level is the level at which we interact optimally in the world with our body. The consequence is that, as a long philosophical tradition had assumed, categorization is embodied—it depends on our interactions and not just the abstract properties of objects in the world. We can here

1 In the words of Gallese and Lakoff: 'It is important to distinguish multimodality from what has been called "supramodality". The term "supramodality" is generally (though not always) used in the following way: It is assumed that there are distinct modalities characterised separately in different parts of the brain and that these can only be brought together via "association areas" that somehow integrate the information from the distinct modalities' (Gallese & Lakoff, 2005).

2 Furthermore, what is true for the basic-level category is also applicable for the more particular ones: with few variants, the drive programmes of a sports car and a runabout are the same.

argue the importance in the phylogenesis of experience-dependent concept formation in a phylogenetic perspective: what would happen to a man interacting with a tiger using the same lovely behavioural repertoire used with a cat (cat and tiger being two very different basic-level categories, though both part of the same, more general 'feline'). He just would not have the time to transmit his genes to his descendants!

In this way, it is easier to consider actual brain organization as the consequence of our evolutionary history; that is, the way in which our brain, and the brains of our ancestors, have been shaped by bodily interactions in the world.

A body-based understanding is now simpler to hypothesize: according to Gallese and Lakoff, understanding requires simulation, as they discuss using the example of the concept of *grasp* whose formation relies on the motor representation used for grasping. A growing body of neurophysiological evidence confirms that embodied processes are actually involved in the comprehension of concrete concepts, such as physical actions and physical objects.

A fMRI study by Tettamanti et al. (2005) shows that listening to action-related sentences activates a left fronto-parieto-temporal network that includes the pars opercularis of the inferior frontal gyrus (Broca's area), those sectors of the premotor cortex where the actions described are motorically coded, as well as the inferior parietal lobule, the intraparietal sulcus, and the posterior middle temporal gyrus. These data provide direct evidence that listening to speech that describes actions engages the visuomotor circuits which promote action execution and observation.

Two researches, one (Hauk et al., 2004) using fMRI and one (Buccino et al., 2005) using motor evoked potentials (MEP) and transcranial magnetic stimulation (TMS) demonstrated that processing verbally presented actions (related to mouth, hand, and foot) activates the specific motor system involved. This is consistent with the hypothesis that concept understanding involves sensory-motor mechanisms (the 'embodied simulation' postulated by Gallese). In particular, TMS and MEP recordings show that when the response to the behavioural task is given with the hand, reaction time is slower if the listened sentence is about a hand-action: the authors explain such data hypnothesizing a sub-threshold motor activation that facilitates the following actual response (Buccino et al., 2005).

A more recent study using fMRI techniques confirms the key role of the pars opercularis in the embodied simulation, which is engaged during the comprehension of sentences describing goal-oriented hand actions (Baumgaertner et al., 2007).

Currently, any traditional theory claiming the disembodiment of concrete concepts encounters great difficulties. The modality-neutral structure is just not needed, it is argued, and if it exists, it would be a useless duplication, contravening Occam's razor.

These results, taken together, are a first confirmation of the embodiment of semantics: conceptual representations accessed during linguistic processing are, in part, equivalent to the sensory-motor representations required for the enactment of the described experience (Aziz-Zadeh et al., 2006).

METAPHORS AND THE BODY

As everyone knows, human language and thought do not operate with just concrete concepts: many facts of interest can appear to consciousness without any impact on our sensory filters. Abstract concepts such as feelings, moral values, and spiritual ideals, before being issues humans are prepared to live or die for, are a daily matter to be dealt with—and

to share with others. The roots of social networks (formal institutions as well as informal bonds) rely on the ability of men and women to think about such concepts, talk about them, and regulate their behaviour in virtue of them.

How can the human brain build a stable representation of concepts such as freedom, morality, and causality, since there is no way to catch them in a perceptual-like fashion? How can the human brain make the necessary computations for abstract thinking needed in order to cope with a permanently changing reality?

By dodging. All natural languages, in the course of cultural evolution, have selected a rich repertoire of metaphors used as equivalences. In order to catch and manipulate an abstract concept, its principal characteristics are compared to those of another concrete, well-known concept, which will work as a prototype. As it is customary to interact with the latter, so it will be with the former. The cognitive linguist calls these 'conceptual' metaphors: the abstract concept (the *explanandum*) to be explained is mapped onto an image schema (the *explanans*), that is, a neural representation whose origin lies in the experiential, sensory-motor domain.

In such a way, the knowledge accumulated during sensory-motor interactions with the physical world—real sensations and actions with real objects—is projected by analogy to the *explanandum* allowing a fictitious and abstract, but no less concrete and effective interaction to take place. Following Lakoff (1987), metaphor is not just a matter of rhetoric, but a way of thinking through a systematic projection from a source domain to a target one. In Lakoff and Johnson's words: 'metaphor is pervasive in everyday life, not just in language but in thought and action. Our ordinary conceptual system, in terms of which we both think and act, is fundamentally metaphorical in nature' (Lakoff & Johnson, 1980).

Let's look at an example: how do we reason and talk about the concept of *time*? Through a limited number of metaphors, 'time is a moving object' being one of these. In some common utterances like 'Christmas is coming' or 'The summer has gone' we can easily recognize a precise mapping of the abstract concept and its features (e.g. time and its discrete moments) on the image schema of the source domain (moving object). In this way, any discrete future moment is perceived as a concrete object moving from a perceptual-like horizon towards a fixed observer, the speed of its movement being the same as the flow of time. Another frequent metaphor is the seemingly different 'time is a ground on which the observer moves'. In this case, the observer walks along a field punctuated by discrete objects representing discrete moments; think about the expressions 'We'll arrive at the date without getting the job done' or 'I'd like to go back to my childhood'. Time is seen here as a fixed background in which the observer can move forward (future) or backward (past). Lakoff and Johnson (1998; 1999) give us a full and rich description of the primary image schemas we use in everyday thought and language, often in a preconscious, automatic way. Some of the prominent primary schemas are the following:

INTIMACY IS CLOSENESS (e.g. We have a close relationship)
DIFFICULTIES ARE BURDENS (e.g. She's weighed down by responsibilities)
AFFECTION IS WARMTH (e.g. They greeted me warmly)
IMPORTANT IS BIG (e.g. Tomorrow is a big day)
MORE IS UP (e.g. Prices are high)
SIMILARITY IS CLOSENESS (e.g. Those colours aren't the same, but they're close)
ORGANIZATION IS PHYSICAL STRUCTURE (e.g. How do pieces of the theory fit together)

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HELP IS SUPPORT (e.g. Support your local charities)
TIME IS MOTION (e.g. Time flies)
STATES ARE LOCATIONS (e.g. I'm close to being in a depression)
CHANGE IS MOTION (e.g. My car has gone from bad to worse)
PURPOSES ARE DESTINATIONS (e.g. He'll be successful, but isn't there yet)
CAUSES ARE PHYSICAL FORCES (e.g. They push the bill through Congress)
KNOWING IS SEEING (e.g. I see what you mean)
UNDERSTANDING IS GRASPING (e.g. I've never been able to grasp transfinite numbers).

A key observation: because they originate in the kinaesthetic possibilities encountered by our body when interacting with the physical world, the most basic of these schemas are limited in number. The use we make of them in understanding and talking about abstract concepts, like love, causality, and time, is omnipresent in our everyday lives.

When the source domain is suitably basic, such as when it deals with human kinaesthetic experience or knowledge of the properties of physical objects, then we are no longer just talking about metaphor, but rather about a system for the embodiment of human cognition. This step is very close to the concept of embodied simulation (Gallese et al., 2004). Embodiment is also referred to as semantic or symbol grounding, by which is meant a process for assigning meaning to an arbitrary symbol. The image schemas consist of basic-level kinaesthetic programmes (Johnson, 1987)—the kinds of sensory-motor experiences that begin at the earliest age and involve the most central objects and actions in our lives. Basic-level, according to the tradition of Rosch, means the level of interaction with the external environment at which people function most effectively and accurately. This level is characterized by gestalt perceptions, vivid mental imagery, and usual and automatic motor repertoires endowed with detailed proprioceptive information.

As anyone can observe, in everyday language we use many more conceptual metaphors than those in the primary mappings listed above. A 'compound' or 'complex' metaphor is a self-consistent metaphorical complex composed of a number of primitive ones. Complex metaphors are created by blending primary metaphors and thereby fitting together small metaphorical pieces into larger metaphorical wholes. For instance, consider the following three primitive metaphors: PERSISTING IS REMAINING ERECT, STRUCTURE IS PHYSICAL STRUCTURE, and INTERRELATED IS INTERWOVEN. These three primitives can be combined in different ways to give rise to compound metaphors that have traditionally been seen as conceptual metaphors. But the combination of these primitives allows for metaphorical concepts without gaps. Thus, combining PERSISTING IS REMAINING ERECT with STRUCTURE IS PHYSICAL STRUCTURE provides for a compound THEORIES ARE BUILDINGS, which nicely motivates the metaphorical inferences that theories need support and can collapse, without any mappings such as 'theories need windows'.

Given the complexity that compound metaphors can reach, it seems likely that some of the cerebral circuitry in charge of processing the most abstract concepts resides in areas which are relatively segregated from their primitive sensory-motor precursors: they could emerge from the differentiation of secondary areas whose roots lay in the primary sensory-motor areas. On the basis of connectionist models (Narayanan, 1999), Lakoff offers the hypothesis that the most abstract concepts, such as metaphorical ones and those belonging to grammar in any natural language, are coded in secondary areas and are not directly involved in action/perception information processing (Gallese & Lakoff, 2005).

On a pragmatic level, researchers have described the embodiment of non-verbal communication (NVC) as the sum of behaviours accompanying verbal content in order to enrich the sharing of meaning. A wide ranging review (Gentilucci & DallaVolta, 2008) gives us confirmation about the development (from the babbling stage onwards) of a gesture/speech coordination system, grounded in Broca's area, thanks to its mirror properties: data from a number of experimental researches suggest an integration by which word and gesture do not semantically interact with each other at the level of emission, but are assembled in a precise temporal order to better specify the meaning of the sentence. What is common to the two systems is the fact that arm movements and speech are integrated by the same control system in order to produce a unique message (Gentilucci & DallaVolta, 2008). A large part of NVC signals is composed of conventional movements with visuo-analogous characteristics directly descending from the same cognitive metaphors that structure the spoken language. Think about a hand in a horizontal cut-like motion moving vertically during the utterance 'He's the most honest man I've ever met'. The gesture draws its meaningfulness from the image schema 'MORE IS UP', and the physical action confers further credibility to the verbal message.

On a neuroscientific level, we have previously accepted that linguistic processing of concrete concepts is possible through the involvement of some of the very same brain structures implicated in perception and action. Let us now see how cognitive neuroscience can help us to understand the way our brain processes metaphors.

Linguistic analysis, as well as psychological studies, indicate an embodiment of metaphor. The human brain creates, manages, and articulates conceptual metaphors through the very same parameters which emerge during the development of sensory-motor skills. The way we comprehend and explain the abstract properties of a concept to others is strictly correlated to (and precisely mirrors) the embodied comprehension they have in their sensory-motor areas about the physical event used as an image schema. Gibbs et al. give us a convincing description of physical momentum/representational momentum matching the way in which a number of daily metaphors are built, such as the expressions: 'I was bowled over by that idea'; 'I got carried away by what I was doing'; 'You had better stop the argument now before it picks up too much momentum and we can't stop it', and so on (Gibbs et al., 2004).

Seitz (2005) accurately reviewed some major strands of scientific evidence (evolutionary, developmental, neuropsychological, and cognitive). He suggests that we recognize and create basic metaphorical associations across disparate domains of experience partly because we are pre-wired to make these linkages. These basic metaphoric equivalences work in an unconscious way, and link together respresentations coded in different modalities including perceptual-perceptual, movement-movement, cross-modal (synaesthetic), and perceptual-affective (Seitz, 2005). Moreover, in accordance with Gallese and Lakoff (2005) and Gibbs et al. (2004), he posits that linkages belonging to a complex, secondary metaphor are a self-consistent amalgam of more than one primitive metaphor, partially losing the involvement of sensory-motor areas.

Indirect clinical evidence of the link between metaphorical generation and manipulation skills and the embodied simulation system is given by the neuropsychology of patients suffering from autism: they cannot make any use of metaphorical images because their language is strictly literal. The evidence relies on the recognized deficit of mirror properties in their fronto-parietal circuitry (Oberman et al., 2005).

The first experimental evidence of the embodiment of abstract language came in a recent study which used a behavioural and a TMS paradigm (Glenberg et al., 2008): the comprehension of sentences describing both concrete transfer (e.g. 'I give you an apple') and abstract transfer (e.g. 'He delegated the responsibility to you') is modulated in the same motor areas. The authors explain that in these areas the motor schema used for execution are encoded (are involved in the comprehension of the action observed by another, i.e. mirror property), and these schema are necessary for understanding language about the same concrete action. They hypothesize that during the development of semantics, similar to what cognitive linguistics theorized about image schema, the motor schema is used as a paradigm to ground related abstract meanings: in their example, the transfer of a message is structured as the transfer of objects, implicating a source location, a destination, and a mode of transfer (Glenberg et al., 2008).

In conclusion, the primary importance of embodied mechanisms in language and thought is presently supported by data from several fields. Nonetheless, a direct, clear demonstration of the close link between abstract language and the role of sensory-motor involvement is still lacking: further experimental data are needed and we believe that the constant progress in neuro-imaging and behavioural protocols will be the determinant.

THE EMBODIMENT OF HYPNOSIS AND ITS USE IN ERICKSONIAN PSYCHOTHERAPY

Even texts about the theory and practice of clinical hypnosis have recently begun to discuss the implications of neurophysiological advances in knowledge. Empathy and experience sharing, which have a key role in creating a rapport zone to mediate consciousness and brain plasticity, are at the root of the implicit acquisition of new, adaptive skills (Rossi & Rossi, 2006), and force us to focus our attention on their neural basis. In this regard, induction procedures, rapport, and hypnotic phenomena can now be reviewed in the light of the mirror system and its mechanism.

As previously discussed (Balugani, 2008; Balugani & Ducci, 2007), hypnotic psychotherapy is advantageous by virtue of its embodied nature: it can engage directly and modulate the basic computational sensory-motor level of the patient. We now want to discuss whether it is possible to extend the same advantages to the linguistic domain of the patient–therapist relationship, including both verbal and non-verbal communication, and we will try to trace and comment on some basic pragmatic principles.

The right hemisphere (RH) is often referred to as a metaphorical site (Watzlawick, 1978) where the sum of largely unconscious processes are placed: when people make use of these processes, their skills are engaged in exploring new experiences and meanings in order to produce a creative change in the personality (Jung-Beeman et al., 2004). During the modified state of consciousness known as hypnosis, the activity of the aware, logical, inhibition-oriented left hemisphere (LH) is reduced in favour of RH holistic, analogical processes (Gruzelier, 1998; 2006). Neurophysiological research on the production and comprehension of metaphors permits us to emphasize the key role that metaphorical language plays in the course of hypnosis-based therapy. The comprehension of new, unconventional metaphors is processed in the RH Wernicke's homologue area, the posterior superior temporal sulcus, and the inferior frontal gyrus of the RH; in contrast, the processing of semantically correlated concepts in salient and conventional verbal expressions relies on LH functioning (Mashal et al., 2005). Moreover, the results support previous research indicating that during word recognition, the RH activates a broader range of related meanings than those allowed

by the LH, including novel, non-salient meanings (Faust & Mashal, 2007; Lindell, 2006). These data suggest a close, functional link between metaphors and hypnosis.

Regarding the uses we make of metaphor in everyday language we can make two distinctions: the first and most obvious use is a rhetorical one, in which a metaphorical image is explicitly understood by the speaker to espouse a non-literal meaning. For example, a patient feeling that he/she does not have sufficient resources to fly up into the air on his/her existential journey could say 'I lost my wings'; in a similar way, we could refer to an impulsive patient by saying 'He doesn't let the grass grow under his feet', and so on. The second use of metaphors is the one described above: the metaphor gives us a map with which we can operate using abstract concepts as if they were concrete entities, having recourse to an experiential repertoire about our previous interactions with the physical world. In the utterance 'Anger urged me to react that way', a patient could select a particular case of the conceptual metaphor EMOTIONS ARE FORCES, which may reveal the impotence and passivity they felt. While the first kind of metaphor is conscious and arbitrary (often a matter of eloquence), the second one is pre-reflexive, unaware, and largely universal for a given idiom. Though universal, some variants can be more frequent in specific conditions, such as in mutually segregated cultural contexts. The psychotherapeutic relationship is no exception—conceptual metaphors are real organizational principles which allow for the building and communicating of shared narratives between therapist and patient (Casonato, 2004). A French paper discusses the conceptual metaphor BODY AS A CONTAINER and its variants in the fields of clinical psychopathology, Freudian and Ericksonian psychotherapy, and poetry (Santarpia et al, 2006).

The concept of rapport refers to the intense cognitive, emotional, and behavioural attunement between patient and hypnotist: thanks to this attunement, both become more mutually responsive. Among the techniques used to empower rapport, 'pacing' involves the therapist's acceptance and utilization of the spontaneous characteristics of a patient's natural language (Bandler & Grinder, 1975; 1976; 1977). By using similar predicates (nouns describing action or events, verbs and their modifiers) the therapist can tailor a more finely graded intervention which follows the patient's existential point of view (Gordon & Meyers-Anderson, 1981). Pacing facilitates rapport because the therapist is in the patient's (linguistic) shoes. When in agreement with the primary embodied nature of language (as discussed above), we record the conceptual metaphors used by the patient for the same reason that we observe and collect all the elements needed to build our 'hypnotic diagnosis' (DelCastello et al., 1987; Lankton et al., 1991; Zeig, 1982). If the patient says 'It makes no sense to me, I can't see any association between my problem and your solution' we first categorize this as a visually inclined metaphor; we can then think about the specific use of the conceptual metaphor SEEING IS KNOWING. We are not pressed by a technical imperative, but aim to encode their very specific phenomenological horizon into their own sensory-motor parameters: if we use the same metaphors we will be better able to attune with them. A second argument in favour of including metaphorical expressions in our hypnotic diagnosis is the known existence of their variants in different psychopathological conditions. In fact, researches show evidence that conceptual metaphors, like TIME IS A MOVING OBJECT, are shown in very different ways in patients who suffer from hypomania or depression (Casonato, 2004). When the excited patient says 'Events overwhelm me' or 'Present is running away' they use metaphor in a particular way: the observer is oriented towards the future and time runs away in a fast, elusive way. Moreover, when depressed pa-

tients say: 'When I realize that time goes on, it's already gone', 'I live in an eternal present', 'I can't go on', they mean that they are turned to the past, time has stopped its flow, and their movement towards future events is impossible. If we are able to catch these detailed 'minimal cues' we will better attune, empathize, and understand our patients' phenomenological experience.

Once good rapport is built and all details are recorded in our hypnotic diagnosis, we meet another principle of Ericksonian therapy: utilization. Our intervention must begin from the frame given by the patient and the lenses they use to look at reality, in order to allow them to build new narratives, new associations, and new evocations (Casilli & Ducci, 2002). It is absolutely necessary that utilization employs the metaphorical repertoire of the patient, both the rhetoric and the concepts. Being an Ericksonian therapist implies using that repertoire in a strategic way—making patients feel accepted and authentically understood; at the same time, we then tell a story, a metaphor, or an anecdote using their own idiom but also promoting therapeutic change.

If 'metaphor allows therapists to send messages resulting from a combination of scientific reasoning and therapeutic intuition' (Casula, 2005), the majority of Ericksonian tools play a role in the space between literal language and bodily actions: that space is metaphor. First of all, the embodied parameters of patient and therapist (Balugani, 2008; Balugani & Ducci, 2007) remind us that 'Ericksonian hypnosis is characterized by the use of indirect suggestions grounded on *linguistic* metaphors of the body . . . indicating *conceptual* metaphors of the body' (Santarpia et al., 2006).

Beyond cognitive and behavioural data, if we assess all the communicative aspects shown by patients, we will have more opportunities to tailor an effective treatment: we will build interventions at the patient's information processing level, of which they are largely unaware, but whose roots are solidly grounded in the sensory-motor code.

Following Haley, analogical and metaphorical techniques are particularly effective with resistant subjects, in the sense that they cannot reject a suggestion they are unaware that they have received (Haley, 1973). In order to raise the effectiveness of our intervention, then, we enrich metaphors about the sensory-motor features belonging to the real action involved, as if it was real. If a continually brooding patient complains about the difficulty of making a decision and says 'I can't get to the point', our purpose will be to imagine walking towards a well-described point in a field of grass, getting over any obstacle.

Our language will be as concrete and simple as possible; such is the language used by the right hemisphere (Gruzelier, 1998). For the same reason, our images will be chosen from basic-level categories, in order to allow the patient rapid access, as well as a more salient representation.

The following is the case of Franco, a young patient who discovered he was HIV positive only five months ago. His health is currently good and he doesn't need to take medication. But his partner is trying to leave him, denying that the reason is the risk of infection. Franco is very depressed, and the situation reactivates old feelings of being inadequate and a loser. During the therapy the hypnotist suggests giving attention to some small and common experiences—like lying on the grass looking at the sky with some rapidly moving clouds and the leaves of a cottonwood moved by a gentle wind, or the sweet sound of little waves on a beach and the smell of the sea on a moonlit night, or the smell of wet ground after a summer rain—and how all these experiences bring together the comfortable feeling of being alive. At the same time, the repetition of these suggestions evokes the strength and

stability during time (in the past, in the present and, above all, in the future) of the cottonwood, of the beach, of the ground, giving the subject an opportunity to identify himself in these features. It wouldn't be the same if we just suggested to Franco to feel comfortable and confident with his own body and sensations: the richness of the descriptions proposed is intended to generate the desired representation in a way that is mostly outside the field of consciousness and intentionality.

With regard to such matters, there are numerous works which include lists of therapeutic metaphors (Barker, 1985; Casula, 2004). Often, however, the easiest way to find a good metaphor is to listen closely to our patients.

In the case of Gianluca, his feelings of emptiness and demotivation to meet the challenges of everyday life are described in his words as being 'barren, dry, with not enough energy inside of me'. The therapist, identifying these details as a part of the metaphor INTERIOR LIFE AS A SOIL, tells the patient to 'watch the field and look at the aqueduct which transports the water: then, patiently go back along the aqueduct and find the exact point where a build-up of withered leaves and dead branches is obstructing the water flow. Once found, attentively clean up the aqueduct with your own hands (ideo-motor hand actions can be suggested to enrich the proprioception) and watch the water begin to flow again in the right way. Going back to the soil, look at the slow but inexorable impregnation and the ground becoming soaked and fertile. Then it can be just a matter of time before the first, little plant reaches for the sun and starts growing in a progressive, confident way.'

Another excellent example of the Ericksonian approach is offered by Roffman (2008), as part of a perceptive article which explains how metaphor works in psychotherapy. He depicts the case of a 9-year-old child suffering from encopresis. When the excited boy narrates in detail descriptions of his uncle working with excavators and bulldozers, the therapist follows him, transforming the casual description into an effective therapeutic metaphor, by asking him what these machines do with the dirt they pick up.

Boy:	They dump it into the dumptrucks.
Therapist:	Then what happens?
Boy:	The dumptrucks take it to the place, the dump or whatever, and drop it out.
Therapist:	They dump it?
Boy:	Yeah, what else should they do with it?
Therapist:	Quite right. But how do they know where to dump it and when?
Boy:	They just know. They're not stupid.
Therapist:	You mean they know where to dump it. They don't just dump it wherever or whenever? They do it in the right place at the right time?
Boy:	Of course, what do you think?

As the reader can realize, the utilization of the image spontaneously brought by the patient allows the therapist to deal with the problem of encopresis in a metaphorical way. The work is protected from the usual schemes and defences typical of the patient's conscious functioning.

CONCLUSIONS

In sum, we strongly believe that the hypnosis of the new millennium can draw many important suggestions from neuroscientific research. As Ericksonian clinicians, our approach to psychotherapy leads us to turn those suggestions into precious benefits to produce the most effective, efficient, and natural interventions for our patients.

As previously discussed (Balugani, 2008) the embodied nature of hypnosis per se, as well as the use hypnosis makes of a wide number of simulation-based skills and phenomena, forces us to realize, recognize, and utilize every indication of those phenomena. So, first of all, we should keep our eyes and ears open in order to detect all the small details of language and communication; in this way, we can attune and try to modulate them at the specific level at which they work. If this is true about muscular tension during an arm levitation, this also must be true when our patients talk about abstract concepts in a metaphorical way: their description will surely be accompanied by particular mimicry or specific non-verbal signalling. A subtle process of visual imagery, the recall of a personal memory, or the use of some common procedural schema are just a few aspects among those that our attention can identify by staying attuned to pragmatic parts of communication.

Secondly, we should extend to metaphors (rhetorical and conceptual) the use of our traditional toolbox. Applying the techniques of pacing and leading or mirroring to metaphors given by patients will allow us to be more efficient; and this efficiency is mandatory in a strategic approach such as Ericksonian therapy. Thirdly, and related to the last point, therapists must remember that they are models[1] for their patients: they must behave in an aware and strategically oriented way in order to elicit the desired changes.

Lastly, our attempts to improve our patients' lives have to be tuned in and synchronous with the processes typically ascribed to the right hemisphere: curiosity, evocation, enrichment of repertoires, openness. Take the Batesonian syllogism in grass (Grass dies; Men die; Men are Grass)[2]: in metaphors as well as in psychotherapy, we operate in a domain where associations are right not if they are valid, but if and when they work. Given that consistence or logical considerations are of no importance and therapists are not the keepers of objective, preassembled truths, it is cardinal to remember that we offer—we do not force. A humble attitude, accompanied by utilization and the use of evocative language, are the basic rules for allowing patients to mobilize their own internal resources and be protagonists of their own change.

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1 Not a moral or personal model but, as the mirror system lesson taught us, a neural model (see Balugani, 2008).

2 As discussed in Roffman (2008).

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